Swerdlow (1949a; 1949b), researchers at the National Bureau of Standards who introduced methacrylic resins as embedding agents as well as heat as the tool for advancing the tissue block toward the knife. Harrison Latta and Frank Hartmann (1950) solved the sharpness problem by introducing glass knifes.[25] In the wake of these developments, Keith Porter, together with Blum, took up Claude's effort to develop an adequate microtome (Porter & Blum, 1953).[26] They were hardly alone in pursuit of a suitable microtome. In 1954 the New York Academy of Sciences held a workshop at which designers from throughout the East Coast met, and about a dozen examples were on display. But Porter and Blum succeeded in developing a microtome that not only cut reliably thin sections but also was easy to use.[27] Its dominance was established when Ivan Sorvall, Inc., of Norwalk, Connecticut, began to produce it commercially a year later. The chief competitor was a European microtome developed by Fritiof Sjöstrand (1953a) and manufactured by L. K. B. Produkter AB, Stockholm. As a result of these advances, by the early 1950s

[25] Robertson (1987) reminisced on Latta's introduction of glass knifes: "I remember clearly one Monday morning that Harrison came into the lab with a milk bottle from home and stated that he was going to make a glass knife. We all laughed at this strange idea, but I followed him up to the machine shop where he got a hammer and smashed the milk bottle and chose a small piece to use as a knife. He mounted a fragment on a dummy steel knife using a black glue, and he and Frank Hartmann proceeded to cut very thin sections that one could use without taking out the plastic. I believe this was the first time anybody had succeeded in getting high-quality sections of biological material routinely thin enough to use for direct study without removing the plastic" (p. 139). Pease added more flavor to the early investigation of knives: "it is amusing to recall the mystique that soon developed in defining and finding the 'perfect' stain-free glass that would make ideal fracture edges. The idea developed that very old glass was apt to be better than new glass (I had a prized piece of broken, heavy, plate glass salvaged from a pre-prohibition bar widow, still with some old gold lettering on it)" (1987, p. 51).

[26] The microtome they produced was similar in some ways to the Cambridge Rocking Microtome, although Porter contended that the similarity was "simply accidental [since we] never had one of the Cambridge instruments in the laboratory at Rockefeller, and I have never seen one" (Porter, 1987). Instead, Porter and Blum credited Stanley Bennett: "In some respects also the microtomes reported on here are similar to an instrument, devoid of moveable bearings, which was observed in experimental stages of construction in H. S. Bennett's laboratory (University of Washington) in 1951. In it, the specimen was supported on the end of a bar and brought past the cutting edge by simply flexing the bar. It has no provision for avoiding the knife on the return stroke and for this and other reasons did not prove satisfactory"(Porter & Blum, 1953, pp. 687–8). Porter (1987) credited Joseph Blum with adding the gimbal for universal motion of the bar and a mechanical advance.

[27] Pease and Porter quoted the comments of Irene Manton twenty-five years later: "It was my privilege, soon after arrival in New York, to attend a meeting of the New York Academy of Sciences at which an array of devices for thin sectioning were displayed, some crude, others almost comically complex, but only the Porter-Blum behaved perfectly, cutting a clean ribbon of serial sections of the right thickness to order from a methacrylate block" (Pease & Porter, 1981, p. 290s).

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